## REMARKS

Reconsideration of the present application is respectfully requested. Claims 1-58 are pending, and claims 1-58 stand rejected. Claims 6, 14, 19, 23, 26, 29, 39-48, and 50-53 have been amended. All claims are allowable and action to that effect is respectfully requested.

Claims 6, 14, 19, 23, 26, 29, 39-48, and 50-53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants respectfully content that, while explicit antecedent basis may have been lacking, the scope of the claims, as originally filed, was reasonably ascertainable and thus the requirements of §112 were met. However, to avoid any issues, the rejected claims have been amended to provide the explicit antecedent basis as suggested.

Claims 1-58 stand rejected under 35 U.S.C. 102(b) as being anticipated by JP 4-166063 to Tanaka (hereafter "Tanaka"). This rejection is traversed. It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP §2131 Verdegall Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, to establish inherency, the evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill in the art. " MPEP §2112, quoting In re Robertson, 49 USPQ2d 1949, 1950-51 (Fed Cir. 1999). In other words, it must be shown that the "allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." MPEP §2112, quoting Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The action fails to establish that all the elements of the rejected claims are expressly or inherently disclosed in Tanaka, and thus the rejection is improper and should be withdrawn.

While the exact operation of Tanaka is not entirely understandable, due to unfamiliarity with the Japanese language, Tanaka does appear to be directed to the interrogation of a stream of fish meat with ultrasound and the detection of nonmetallic rubber and glass in the meat based on a received response. However, the received response and associated detection scheme appear different from the present invention. Tanaka describes sensing foreign material 41 by comparing the transverse waves detected at receivers 25 to the normal wave form stored in memory 34 with wave form analyzer 35. As such, the foreign material is sensed "from a change in wave form" of the waves that propagate through the fish meat. Tanaka does not describe this change in wave form as an off-angle scattering response nor does Tanaka describe determining the presence of foreign material when the off-angle scattering response exceeds a predetermined threshold, for example as recited in independent claim 1.

Rather, the "normal wave form" stored in memory 34 of FIG. 6 appears to be the same as the one depicted in FIG. 8, and the wave forms of FIGS. 9-11 are presumably the abnormal or foreign material wave forms. Comparing these normal and abnormal wave forms, and recognizing that they are all presented on the same amplitude scale, it seems that Tanaka's system results in a *decrease* in the amplitude of the received signal when foreign material is present, as would be expected in through-transmission type detection system or ones based on detection of signal loss cause by the presence of foreign material. By contrast, the present invention, which looks specifically for the off-angle scattering from foreign material, picks up a relatively low level of background noise in the absence of foreign material with foreign material indicated by a significant *increase* in signal amplitude. As described at page 12 lines 10-19 of the present Specification, this is believed to result because scattering targets having significant contrast with the bulk material, in terms of acoustic impedance, size, shape, or hardness, scatter

ultrasound at higher intensities and over larger angles than the background matrix. Accordingly, because of this different mechanism of operation, the present invention can achieve significantly greater detection sensitivity with the appropriate selection of angular orientation than Tanaka's seemingly through-transmission or signal loss based system.

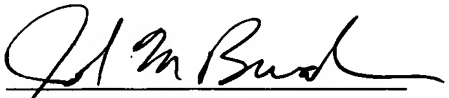
As Tanaka does not teach the detection of foreign material based on the off-angle scattering response as claimed, it cannot properly teach the specific angles of claims 2-5 as suggested in the Action. Furthermore, while it is unclear what portions of Tanaka's Figures are asserted to teach the claimed angles, Figure 6 shows the transmitter 24 and receivers 25 essentially diametrically opposed, and Figure 5 does not specify the interrogation axis of the transmitter 24. As such, the detection of scattering at an angle between about 10 and 45 degrees of the interrogation axis of the transmitter (claim 3) nor the detection with a receiver aligned between about 15 and about 25 degrees of the interrogation axis (claim 5) are properly taught or suggested by the reference.

Moreover, besides the general difference noted above, the Action appears to have overlooked certain features of the individual claims, each of which sets forth a different scope of protection. For example, independent claim 1 recites pulsing a focused sound field of ultrasound into a process stream and independent claim 15 recites inspection devices operable to transmit pulses of focused ultrasound to interrogate a process stream. Beyond specifying transverse waves, Tanaka is not seen to describe the sound filed employed, and the Action fails to establish that a pulsed, focused sound field is necessarily employed. It is at least possible, if not probable, that Tanaka employs a divergent or unfocused sound field. Use of a pulsed, focused sound field as claimed increases the contrast between the background noise and the off-angle scattering from foreign material and as such inventively contributes to the detection efficiency.

Similarly, claims 56-58 recite capturing images while optical backlighting. Nothing in Tanaka describes optical backlighting nor the combination of ultrasonic inspection with any other inspection technique. An application of the present invention is the detection of bones in meat, and Applicants have found the combination of the ultrasonic detection with the optical backlighting to be a surprisingly effective combination. For example, optical backlighting can be more sensitive to foreign material near the surfaces whereas the off-angle ultrasonic detection can be more sensitive for foreign material removed from the surfaces. Accordingly, at least because the art does not teach or suggest the combination, and for other reasons as well, claims 56-58 are patentable.

In view of the forgoing, reconsideration of the present application, as amended, is respectfully requested. All pending claims are allowable. The undersigned would welcome a telephone call to discuss any matter that would expedite prosecution of the present application.

Respectfully Submitted,



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